46.   (Unchanged) The three dimensional display of claim 25, wherein the controller receives an input image that is coded in a three dimensional coordinate system.

47.   (Unchanged) The three dimensional display of claim 46, wherein the input image is received from one of a computer, television signal receiver, cable system receiver, satellite receiver, and a storage medium.

48.   (Unchanged) The three dimensional display of claim 46, wherein the control system pixelizes the input image for reproduction by the three dimensional display.

49.   (Unchanged) The three dimensional display of claim 25, wherein the light emitting elements are formed into a matrix having a cube shape.

REMARKS

Claims 1-49 are pending in the present application. By this Response, claim 25 is amended to include the recitation of a three dimensional matrix of light emitting elements. Support for the amendment to claim 25 may be found at least in originally filed claim 1. Reconsideration of the claims is respectfully requested.

I.   **Telephone Interview with Examiner Nguyen**

Applicant thanks Examiner Nguyen for the courtesies extended to Applicant's representative during the January 18, 2002 telephone interview. During the interview, Applicant's representative asserted that the references do not teach a three dimensional matrix of light emitting elements. Furthermore, Applicant's representative asserted that the Office Action does not address the majority of specific features recited in the dependent claims. Rather, the Office Action merely addresses these claims in general rejections of other claims without regard for the specific features recited therein. In response, Examiner Nguyen stated that Applicant must file a Response pointing out these deficiencies in the Office Action. Accordingly, the Remarks herein incorporate the substance of the assertions made during the January 18, 2002 telephone interview with

regard to the distinctions over the prior art and the deficiencies of the Office Action, as required by the Examiner. Applicant hereby requests withdrawal of all of the rejections set forth in the Office Action for the reasons discussed hereafter.

II.   Rejection of Claims 1-2, 4-26 and 28-49 under 35 U.S.C. § 103

The Office Action rejects claims 1-2, 4-26 and 28-49 under 35 U.S.C. § 103(a) as being unpatentable over Harrold (U.S. Patent No. 6,281,861). This rejection is respectfully traversed.

As to claims 1-2, 4-26 and 28-49, the Office Action states:

> As to claims 1 and 24, Harrold teaches 3D display which includes a matrix of the triangle 6 and 7 representing RGB pixels matrix (see col. 5, lines 16-19), the RGB pixels matrix are controlled by the circuit 25 (see col. 6, lines 24-25). It would have been obvious to a person of ordinary skill in the art to recognize that Harrold discloses the modular may also be embodied in light emitting technology with each picture elements having a light emitting element as claimed (see col. 3, lines 19-21).
>
> As to claims 2 and 4-18, Harrold teaches 3D display which includes the array 20 comprising RGB light-emitting pixels (see col. 6, lines 47-50). It would have been obvious to a person of ordinary skill in the art to recognize that Harrold discloses a red light emitting element, a green light emitting element, and a blue light emitting element as claimed.
>
> As to claims 19-23, Harrold teaches a circuit 25 may comprise a computer (see col. 6, lines 24-30).
>
> As to claim 25, Harrold teaches 3D display which includes a matrix of the triangle 6 and 7 representing RGB pixels matrix (see col. 5, lines 16-19), the RGB pixels matrix are controlled by the circuit 25 (see col. 6, lines 24-25). It would have been obvious to a person of ordinary skill in the art to recognize that Harrold discloses the modular may also be embodied in light emitting technology with each picture elements having a light emitting element as claimed (see col. 3, lines 19-21).
>
> As to claims 26 and 28-49, Harrold teaches 3D display which includes the array 20 comprising RGB light-emitting pixels (see col. 6, lines 47-50). It would have been obvious to a person of ordinary skill in the art to recognize that Harrold discloses a red light emitting element, a green light emitting element, and a blue light emitting element as claimed.

Claim 1, which is representative of amended independent claim 25 with regard to similarly recited subject matter, reads as follows:

1.   A three dimensional display, comprising:
        <u>a three dimensional matrix of light emitting elements</u> capable of
generating images in three dimensions; and
        a base coupled to the three dimensional matrix,
the base having electrical circuitry for powering and controlling the three
dimensional matrix. (emphasis added)

Harrold teaches a spatial light modulator and directional display for generating

autostereoscopic three dimensional displays. An autostereoscopic display makes use of

interlaced stereo pairs of images (i.e., a pair of images corresponding to views through

the left and right eyes) in a two dimensional display. The stereo pairs are interlaced in

alternate columns in a two-dimensional image. A lenticular lens is placed in front of the

interlaced image. The lenticular lens is an array of very narrow vertical cylindrical

lenslets spaced to correspond to the columns of the interlaced stereo pair. In this manner,

the appropriate images of the stereo pair are directed to the proper eyes, thus generating a

three-dimensional image using a two dimensional display.

        Thus, Harrold is directed to using a two dimensional display to generate the

appearance of a three dimensional image. This is clear from the text and figures of

Harrold where Harrold specifically states that the array of LCD/ELD pixels 20 (see

Figure 9) is an array of pixels arranged as rows and columns as illustrated in Figure 5

(column 5, lines 45-47). Furthermore, all of the figures in Harrold show two dimensional

arrays of pixels, <u>not</u> three dimensional matrices of light emitting elements.

        To the contrary, the present invention, as recited in independent claims 1 and 25,

makes use of a three dimensional matrix of light emitting elements. This feature is not

taught or suggested by Harrold. Thus, while the Harrold mechanism is used to generate a

three dimensional image, as perceived by a viewer, in actuality Harrold is using a two

dimensional array of pixels that are interlaced to trick the viewer's eye into perceiving the

image as a three dimensional image. The present invention, however, provides a true

three dimensional image through use of a three dimensional matrix of light emitting

elements. The mechanism of Harrold is not capable of generating a true three

dimensional image.

        Furthermore, it would not have been obvious to one of ordinary skill in the art to

modify Harrold to include a three dimensional matrix of light emitting elements. The

mechanism of Harrold is specifically designed to be used with a two dimensional array of pixels. Harrold provides no teaching or suggestion that the apparatus and method described may be extended to be used with a three dimensional matrix of light emitting elements. Moreover, it is not at all clear how one would, if motivated to do so, extend the teachings of Harrold to a three dimensional matrix of light emitting elements. To do so would render the mechanism in Harrold inoperable since the methodology of the Harrold invention is based on the interlacing of pixels in a two dimensional array of pixels.

Thus, Harrold does not teach or suggest all of the features recited in independent claims 1 and 25. At least by virtue of their dependency on claims 1 and 25, respectively, Harrold also does not teach or suggest the features recited in dependent claims 2, 4-24, 26 and 28-49. Accordingly, Applicant respectfully requests withdrawal of the rejection of claims 1-2, 4-26 and 28-49 under 35 U.S.C. § 103(a).

In addition to the above, while the Office Action appears to address the dependent claims by including their claim numbers in large groups of claims treated together, in actuality the Office Action does not address the specific features set forth in most of the dependent claims. For example, while the Office Action mentions claim 24 in the rejection of claim 1, there is no treatment of the actual features of claim 24 in the rejection. Claim 24 recites that the three dimensional matrix of light emitting elements is has a cube shape. Clearly, Harrold does not teach or suggest a cube shaped matrix of light emitting elements. Harrold only teaches a two dimensional array as depicted in all of the figures of the Harrold reference. A two dimensional array cannot generate a cube shape because a cube is three dimensional in nature by definition.

The Office Action alleges to address the features of claims 2, 4-18, 26 and 28-49 by stating that Harrold teaches a three dimensional display which includes an array comprising RGB light-emitting pixels. However, the specific features of claims 2, 4-18, 26 and 28-49 are not addressed by this general statement. For example, claim 4 recites "wherein the red light emitting element, green light emitting element, and blue light emitting element each have an anode and a cathode" (emphasis added), claim 5 recites "wherein an anode of one of the pixels is shared by at least one other pixel" (emphasis added), claim 6 recites "wherein a face of one of the pixels is shared by another pixel" (emphasis added), claim 7 recites "wherein a top face of a pixel is the bottom face of a

neighboring pixel, and wherein the <u>side of the pixel is the side of another neighboring pixel</u>" (emphasis added), and so on. None of these features are taught by Harrold and none of these features are addressed by the Office Action's general statement that Harrold teaches an array having RGB light emitting pixels.

Moreover, claims 8-18 recite very specific arrangements of components of the three dimensional display that are not even addressed by the Office Action. For example, claim 8 recites "wherein electrical connections between the pixels, signal sources and power sources <u>are positioned in seams between pixels</u>" (emphasis added), claim 9 recites "wherein <u>an anode bus line is positioned in a seam from a first anode of a pixel to a second anode of another pixel</u>" (emphasis added), claim 10 recites "wherein <u>a first anode of a first red light emitting element of a pixel is connected to a second anode of a second red light emitting element in another pixel by a straight line bus connection along a seam</u> in any direction <u>in the three dimensional matrix</u>" (emphasis added), claim 11 recites "wherein <u>a first anode of a first green light emitting element of a pixel is connected to a second anode of a second green light emitting element in another pixel by a straight line bus connection along a seam</u> in any direction <u>in the three dimensional matrix</u>" (emphasis added), and so on. None of these features are taught by Harrold and none of these features are even addressed by the Office Action's general statement that Harrold teaches an array having RGB light emitting pixels. Likewise, the features of claims 12-18, 26 and 28-49 are also not addressed by the Office Action. Thus, the Office Action has not established a prima facie case of obviousness with regard to claims 2, 4-18, 26 and 28-49.

Similarly, with regard to claims 19-23, the Office Action merely states "Harrold teaches a circuit 25 may comprise a computer (see col. 6, lines 24-30)." However, for example, claim 21 explicitly recites "wherein the control system receives an input image <u>coded in a three dimensional coordinate system</u>" (emphasis added). Harrold does not teach or suggest that the image is received by a control system coded in a three dimensional coordinate system. To the contrary, the image of Harrold is coded in a two dimensional coordinate system because the display device in Harrold is a two dimensional display device.

Thus, in addition to defining over Harrold based on their dependency on claims 1 and 25, respectively, dependent claims 2, 4-24, 26 and 28-49 are also distinguishable

over Harrold on their own merits based on the features cited therein. Accordingly, for all of the reasons set forth herein above, the rejections of claims 1-2, 4-26 and 28-49 should be withdrawn.

III.   Rejection of Claims 3 and 27 under 35 U.S.C. § 103

The Office Action rejects claims 3 and 27 under 35 U.S.C. 103(a) as being unpatentable over Harrold in view of Farnworth et al (U.S. Patent No. 5,986,409). This rejection is respectfully traversed.

With regard to claims 3 and 27, the Office Action states:

> As to claims 3 and 27, Harrold teaches all of the claimed limitations of claims 1 and 2, except for "a red light emitting element, a green light emitting element, and a blue light emitting element are each comprised a cell having an anode, a cathode, a gas volume and a phosphorus material." However, Farnworth teaches a plasma display of electrons and icons (see col. 2, line 10) which includes the color pixels having a color cell 330R, 330B, 330G a gas discharge, phosphors (see col. 7, lines 55-65), a cold cathode field emission display, anode the display screen (see col. 1, lines 51-54). It would have been obvious to a person of ordinary skill in the art at the time of the invention to provide a trio of color pixel 330 taught by Farnworth in the light emissive display of Harrold's system because of retaining high resolution images and requisite thinness of the FED (see col. 1, lines 62-63 of Farnworth).

Farnworth does not provide for the deficiencies of Harrold discussed in detail above. That is, Farnworth does not teach or even suggest a three dimensional matrix of light emitting elements. In fact, Farnworth is directed to a two dimensional flat panel display that is made up of a two dimensional array of display pixels 10,100 arranged in rows and columns (column 8, lines 5-7, lines 43-45). Thus, any alleged combination of Farnworth with Harrold would still result in a two dimensional display device in which pixels are arranged in a two dimensional array rather than a three dimensional matrix as recited in claims 1 and 25 from which claims 3 and 27 depend.

Furthermore, it would not be obvious to modify Farnworth, or any alleged combination of Farnworth and Harrold, because of the same reasons as noted above with regard to Harrold. First, it is not taught or suggested in Farnworth to extend Farnworth to

be applicable to a three dimensional matrix of light emitting elements. Second, it is not clear from the text of Farnworth how one of ordinary skill in the art would, if motivated to do so, extend the teachings of Farnworth to a three dimensional matrix of light emitting elements. Third, to extend the teachings of Farnworth to a three dimensional matrix of light emitting elements would render the Farnworth mechanism inoperable because the Farnworth mechanism is specifically designed to be used with a two dimensional array of pixels.
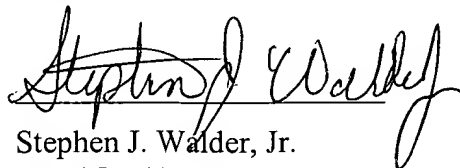
Thus, Applicant respectfully submits that neither Harrold nor Farnworth, either alone or in combination, teach or suggest the features recited in claims 3 and 27. Accordingly, Applicant respectfully requests withdrawal of the rejection of claims 3 and 27 under 35 U.S.C. § 103(a).

IV.   Conclusion

It is respectfully urged that the subject application is patentable over Harrold and Farnworth and is now in condition for allowance. The Examiner is invited to call the undersigned at the below-listed telephone number if in the opinion of the Examiner such a telephone conference would expedite or aid the prosecution and examination of this application.

Respectfully submitted,

DATE: 1/21/02

Stephen J. Walder, Jr.
Reg. No. 41,534
Carstens, Yee & Cahoon, LLP
P.O. Box 802334
Dallas, TX 75380
(972) 367-2001
Attorney for Applicant

APPENDIX OF CLAIM AMENDMENTS
January 21, 2002

Please amend claim 25 as follows:

25.   (Once Amended) A three dimensional display, comprising:

a plurality of three dimensional light emitting elements configured [to emit] <u>into a three dimensional matrix of light emitting elements that emits</u> light in three dimensions; and

a controller that controls the operation of the light emitting elements to generate a three dimensional image.